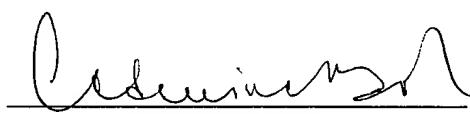


Affidavit of Accuracy

I, Catherine Bokor, Vice President of Accurapid Translation Services, Inc., hereby certify that the attached translation from German to English of German Patent Application Reference No. 197 50 361.6, filed on November 14, 1997 at the German Patent Office, entitled VERFAHREN ZUR ÜBERTRAGUNG VON INFORMATIONEN BZW. ENDGERÄT ZUM EMPFANG VON DATEN [METHOD FOR TRANSMITTING INFORMATION AND TERMINAL DEVICE TO RECEIVE DATA] was performed by Accurapid Translation Services, Inc. I also certify that our editor, who is a competent translator in the German and English languages, carefully compared the translation to the original, and that, to the best of my knowledge and belief, it is an accurate and full translation of the original text.

Poughkeepsie, November 11, 2003



Catherine Bokor

METHOD FOR TRANSMITTING INFORMATION AND TERMINAL DEVICE TO
RECEIVE DATA

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Background Information

The invention relates to a method for transmitting information and a terminal device for receiving data
5 according to the definition of the species of the independent patent claims. Methods for transmitting information and terminal devices are already known in which the data providers provide data services 4, 5 which are each adapted to the data processing capabilities of terminal
10 devices 1, 2 (see Figure 1). Such systems are, however, very inflexible.

Advantages of the Invention

15 In contrast, the method according to the present invention for transmitting information and the terminal device according to the present invention for receiving data have the advantage that the data services need no longer be adapted individually to the capabilities of the terminal
20 devices. Rather, it is the case that the data can be generated in a standardized format and can then be correspondingly adapted by interfaces to the capabilities of the terminal devices for data processing. Consequently, terminal devices with varying capabilities can use the same
25 data service. Moreover, the configuration of the terminal devices is simplified since essential functions now need only be present once in the data providers. Since the interfaces are only present with the data providers, errors can be corrected very easily in a central location and the

adaptation to new terminal devices need take place only once.

5 The measures described in the dependent patent claims make advantageous improvements of the objects of the independent patent claims possible. A radio communications network, a digital mobile telephone network in particular, is used advantageously for the exchange of data. In this connection, data can then be transmitted both from the terminal device
10 to the service provider and in reverse direction.

Drawings

15 Exemplary embodiments of the present invention are shown in the drawings and are explained in greater detail in the following description. Figure 1 shows a conventional method of data exchange between terminal devices and service providers and Figure 2 shows the method according to the present invention for exchanging data between a service provider and terminal devices.
20

Description

Figure 1 shows an already known system for transmitting information. This system has data users 1, 2 which, for example, are designed in the form of terminal devices in a motor vehicle, e.g., car radios with supplementary functions. Data users 1, 2, i.e., terminal devices 1, 2, are paired with a data provider 3, i.e., an infrastructure 3.
25 This data provider 3, i.e., infrastructure 3, generates data which is transmitted to the data users via a transmission medium 10. The transmission medium is represented by arrows
30 10 in this case. Data transmission medium 10 is conceived of

in particular as, for example, digital radio telephone systems such as the GSM mobile radio telecommunications system in this case. With the GSM mobile radio telecommunications system, it is possible to transmit data within the context of the Short Message Service. In addition, it is also possible to transmit data via the normal voice channels of the GSM mobile radio telephone, for example in the form of fax data. In this connection, as suggested by arrows 10, data can be transmitted not only by the data providers to terminal devices 1, 2 but terminal devices 1, 2 can also transmit data to data providers 3. In particular, this serves the purpose of requesting appropriate data from data providers 3 initiated by terminal devices 1, 2.

In Figure 1, data providers 3 have two different data services 4 and 5, each of which is adapted to terminal devices 1 and 2. These different data services 4, 5 can in fact have essentially the same functionality; however, they are adapted to the particular capabilities of terminal devices 1 and 2. Data services 4 and 5 may, for example, include drawing up a travel route for the user, taking the particular currently existing traffic situation into account. Accordingly, the users would enter their starting point and destination in terminal devices 1 and 2 and then transmit this data to service provider 3 via transmission medium 10 with a corresponding request to draw up a travel route. Data services 4 and 5 then generate the optimum travel route and transmit it back to terminal devices 1, 2 via transmission medium 10. Terminal devices 1, 2 differ from each other, however, essentially in the way this information can be displayed. Terminal device 1 has, for example, a small display and a voice output. The optimum

route would then be presented by the display of brief location data on the screen and the output of corresponding voice signals as needed. Terminal device 2 has, for example a large color screen. In this terminal device, the 5 information concerning the optimum travel route would then be shown on the screen as a map with appropriate color markings. Due to the different capabilities of the terminal devices, different data services 4, 5 must be provided by the data providers, each being adapted to the data 10 processing capabilities of terminal devices 1, 2.

A method according to the present invention for transmitting information between a data provider 3 and data users 1, 2 is shown in Figure 2. Terminal devices 1, 2 of transmission 15 medium 10 and data providers 3 corresponding to the corresponding elements from Figure 1. These terminal devices differ in particular with regard to their capabilities for processing data, in particular in the display on a screen or output in the form of speech.

20 The internal configuration of data provider 3 is different from Figure 1. Data provider 3 has only one data service 4 which is configured independently of the data processing capabilities of terminal devices 1, 2. Before the data is 25 transmitted to the respective terminal devices 1, 2 via transmission medium 10, it is correspondingly adapted to terminal devices 1, 2 by interfaces 6, 7. It is the task of these interfaces 6, 7 to adapt the data provided by data service 4 to the capabilities of terminal devices 1, 2 and, 30 correspondingly, to adapt to data service 4 the information sent by terminal devices 1, 2 to data provider 3. Interfaces are understood here to mean interface converters which are, for example, configured in the form of software and adapt

the data from the terminal device to the data service or in reverse direction. For example, terminal device 1 can have a voice input. This voice data is then transmitted to interface 6 and processed there into appropriate information 5 for data service 4. For the example described above, this information can be the starting point and the destination of the planned trip. Using this data, data service 4 determines an optimum route and provides interface 6 with a large amount of information regarding the optimum route. If data 10 service 4, for example, makes a map available, interface 6 converts this information into appropriate data for a brief written display or voice output in terminal device 1 since this corresponds to the capabilities for further data processing of terminal device 1. Therefore, only data in a 15 format that can be processed by terminal device 1 is transmitted from interface 6 by communication medium 10. Terminal device 2 has a larger color screen, with the aid of which the user of terminal device 2 can enter a starting point and destination for his trip (for example, a touch 20 screen). This data is transmitted via communication medium 10 to interface 7 which then generates appropriate input data for data service 4. Data service 4 accordingly draws up the route, in this case, for example, again in the form of a large map which cannot be displayed on the screen of 25 terminal device 2 in that format and size. Interface 7 will then process this data appropriately by processing the map data that is not needed, for example, because the map section made available by data service 4 is too large, to conform to the format that can be displayed in terminal 30 device 2. Only this data is then transmitted via interface 10 to terminal device 2, i.e., terminal device 2 receives in this case also only the data which it can reasonably process further.

The arrangement of the interface at data provider 3 results in the advantage that it is not necessary to create a separate data service for each terminal device 1, 2 which is adapted to the capabilities of the terminal device. Rather, 5 the case is that one data service can be used for completely different terminal devices which may vary greatly with regard to their data processing capability. The expense for creating data services is thus reduced. Moreover, it is accordingly possible to design the terminal devices to be 10 correspondingly simpler since the terminal devices do not need to be adapted to an already existing data service, but rather conversely, the data services are adapted to the capabilities of the terminal devices. This has the additional advantage that if additional terminal devices 15 with new data processing capabilities are introduced, the already existing data services can be easily adapted to these new terminal devices. When new types of terminal devices appear, only the interfaces must be adapted to the new terminal devices.

20 It is not absolutely essential to arrange interfaces 6, 7 together with data service 4. It is just as conceivable for providers of communication medium 10, for example, operators of digital mobile telephone networks, accordingly to 25 purchase data from service providers and then process it for their mobile telephone customers. In such a case the service provider shown in Figure 2 would thus be made up of two different providers which, however, from the customer's point of view exist as a single data provider 3.

30 The shifting of some of the functions from the terminal device to data provider 3 makes it possible for different terminal devices to use the same service. Moreover, the

terminal devices are thereby simplified since the necessary extra expense for adapting different terminal devices to the data service is incurred only once by the service providers. In addition, this also makes it very easy to expand existing services with additional functions. Only the interfaces would need to be adapted accordingly. For terminal devices with new display capabilities, only corresponding interfaces need be set in place at the data providers. At the same time, the already existing services can also be used. If errors occur, they can be corrected very easily at a central location at service providers 3 without the need for exchanging the software in all the terminal devices. In principle, it is therefore generally advantageous for the data providers to adapt to the terminal devices and not the reverse.

One option for transmitting the data processing capabilities of the terminal device is to have only one terminal device identifier or one terminal device code stored in the terminal devices, the code then being transmitted to the service providers. A list is stored in the interfaces or the service providers which then permits the identification of specific data processing capabilities.

Claims

1. A method for transmitting information between a data provider (3) and data users (1, 2), in particular between a service provider (3) and terminal devices (1, 2) in a motor vehicle (car radio), the data users (1, 2) being different with regard to their data processing capabilities, characterized in that the data provider (3) makes a data service (4) available in a standardized format, and that interfaces (6, 7) are provided, via which the data in the standardized format is adapted to the respective data processing capabilities of the data users (1, 2).
2. The method according to Claim 1, characterized in that the transmission between the data provider (3) and the data users (1, 2) takes place via a radio communications network, a digital mobile telephone network in particular.
3. The method according to one of the preceding claims, characterized in that the data users (1, 2) transmit request data to the data providers (3), and that both a data service (4) as well as an associated interface (6, 7) are selected on the basis of the request data.
4. A terminal device (1, 2) for the reception of data from a data provider, a request signal being sent by the terminal device (1, 2) to the data provider, via which data can be requested from the data provider (3), the terminal devices (1, 2) having specific capabilities for processing the data, characterized in that the terminal device (1, 2) transmits information concerning the terminal device's (1, 2) data processing capabilities with the request signal to the data

provider (3), and that the data thus made available by the service provider (3) can be adapted to the data processing capabilities of the terminal device (1, 2).

5. The terminal devices according to Claim 4, characterized in that the terminal device can exchange data with the data provider (3) via a radio communications network, a digital mobile telephone network in particular.

6. The terminal devices according to Claim 4 or 5, characterized in that the terminal device is designed as a car radio with supplementary functions.

7. The terminal devices according to Claim 4 to 6, characterized in that the information concerning the data processing capabilities of the terminal device (1, 2) includes a terminal device identifier.

Abstract

A method for transmitting information between a data provider and data users is described in which the data users 5 may be different with regard to their data processing capabilities. An interface is provided between the data provider and the data user, via which the data is adapted to the respective data processing capabilities of the data users. Corresponding terminal devices transmit information 10 concerning the terminal device's data processing capabilities with the request for data.

Figure 2

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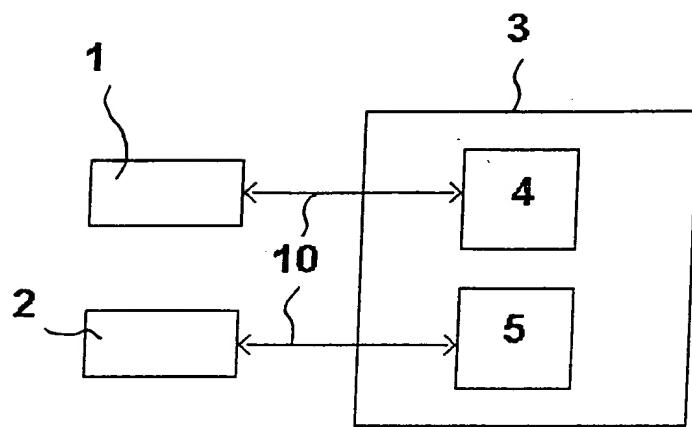


Fig. 1

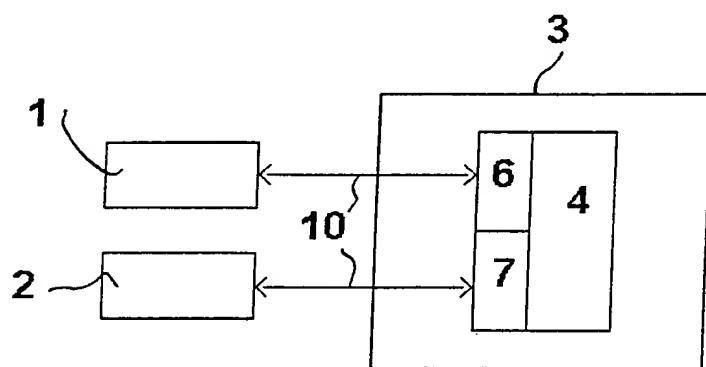


Fig. 2